Case 6956CIP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: QI WANG

Examiner: Egwim, Kelechi Chidi

Serial No.: 09/761,625

Group Art Unit: 1713

Filed: January 17, 2001

For: STABILIZATION OF POLYMERS AFTER EXPOSURE TO OXIDATION

The Commissioner of Patents
and Trademarks
Washington, D.C. 20231

**DECLARATION UNDER 37 C.F.R. 1.132**

Sir:

Qi Wang declares as follows:

1. I am the inventor of the subject matter of the above-identified patent application.

2. I received a Ph.D. degree in Organic Chemistry in 1990 from the University of Southern California. Since 1997 I have been employed by Occidental Chemical Corporation where I am now a Scientist doing research in organic synthesis and polyvinyl chloride.

3. The stabilizers within the scope of the claims of the above-identified patent application are all either commercially available or can be prepared by straightforward techniques that would be obvious to any person having a doctorate in organic chemistry. None of the stabilizers within the scope of the claims of the above-identified patent

application are difficult to synthesize and no undue experimentation would be required to synthesize them.

4. Some of the 4,7-dihydro-1,3-dioxepins, such as 4,7-dihydro-2-phenyl-1,3-dioxepin and their benzo analogs, such as 1,5-dihydro-3-methoxy-2,4-benzodioxepin, some of the 2-butene-1,4-diol derivatives, such as cis-4-benzyloxy-2-buten-1-ol, and the parent phthalan, as well as its non-aromatic ring-containing analogs, such as 2,5-dimethoxy-2,5dihydrofuran, are commercially available from the Sigma-Aldrich Company. Stabilizers in these categories that are not commercially available can be prepared by condensing an allylic diol or an aromatic analog of an allylic diol with an aldehyde, ketone, acid, acid halide, ester, alkyl halide, or alcohol, or by other reactions known to those skilled in the art. See, for example, "A Stereospecific Route to Aziridinomitosanes: The Synthesis of Novel Mitomycin Congeners," by Samuel Danishefshy et al. *J. Am. Chem. Soc.* **1985**, *107*, 3891-3898. Some of the open chain aromatic ring and triple bond-containing stabilizers, such as 1,4-benzenedimethanol, 2-butyne-1,4-diol and 2,6-pyridinedimethanol, are available from the Sigma-Aldrich Company. The stabilizers in this category that are not commercially available, can be prepared by alkylation of commercially available diols via the Williamson reaction or by alkylation of commercially available aromatic compounds via a Friedel-Craft reaction. (See *Advanced Organic Chemistry*, by Jerry March, 4$^{th}$ ed., page 342 and pages 479-484.) Stabilizers containing heteroatoms, such as Sn, Si, P, and

B, can be prepared by reacting the corresponding alcohols with a mono- or di tin, silicon, phosphorus, or boron halide. For example, the silicon derivatives can be made by the method described in *Silicon Reagents for Organic Synthesis* by W. P. Weber. Stabilizers where Y is a sulfur atom, such as 1,4-, 1,2-, and 1,3-benzenedimethanethiols, are commercially available from the Sigma-Aldrich Company. Commercially unavailable stabilizers in this category can be prepared from alcohol, aldehyde, and aromatic ring-containing compounds by methods such as those described by G. A. Olah, Qi Wang, et al. ("Superelectophilic Methylthiomethylation of Aromatics with $CH_3SCH_2Cl$:$3AlCl_3$." *Synthesis*, **1994**, 276.; "Boron Trifluoride Monohydrate Catalyzed One Flask 2,2,2-Trifluoro-1-(ethylthio)ethylation of Aromatics with Trifluoroacetaldehyde Hydrate and Ethanethiol." *Synlett*, **1993**, 32.)

5. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or any patent issuing thereon.

Date: 09/20/02

Qi Wang